

## Chapter 11

# Overview of Homesteads, Manhattan Project Resources, and Early Cold War Resources Impacted by the Cerro Grande Fire

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### INTRODUCTION

In May 2000, the Cerro Grande Fire burned approximately 8,000 ac of DOE-managed land at LANL. Although the fire was generally of low intensity within the boundaries of LANL, it impacted a significant number of LANL's cultural resources. Historic wooden properties, such as Homestead period cabins and Manhattan Project buildings and structures, were affected more heavily than ancient archaeological sites.

We provide a general overview of the Homestead period at LANL, along with that of the Manhattan Project and Early Cold War period. We then briefly summarize the impacts that the Cerro Grande Fire had on these resources, and provide some management recommendations specific to these historic resources. Chapter 12 presents a detailed discussion of specific historic archaeological sites impacted by the Cerro Grande Fire, utilizing the assessment format presented in Chapters 7 through 10.

### *Homestead Period (1890–1942)*

Formal homesteading on the Pajarito Plateau began in the 1890s. Many of the original patent holders were Hispanic Americans who had permanent homes in the Rio Grande Valley. Homestead families used the Plateau for seasonal farming, ranching, and resource gathering. Notable exceptions to this pattern included the establishment of a few permanent Anglo ranches such as the Los Alamos Ranch School, located in the area of present-day downtown Los Alamos, and Anchor Ranch, located on LANL land. The Los Alamos Ranch School was in operation from 1918 until the end of the Homestead period in 1942, a date that coincides with the U.S. Government's acquisition of lands on the Pajarito Plateau for the creation of a secret wartime laboratory.

Patented homestead sites located at LANL are complex sites exhibiting a variety of historic features. These features include the remains of wooden buildings and structures such as cabins, sheds, corrals, animal pens, privies, and fence lines. Historic artifact scatters, subsurface features, and a diversity of rock features are also commonly found on LANL land.

### ***Manhattan Project (1942–1946)***

The scientific laboratory at Los Alamos was the location of secret research and design efforts for the development of the first atomic weapons. This secret undertaking was known as Project Y of the Manhattan Project. Although the fission bomb was conceptually attainable, many difficulties still stood in the way of producing a usable weapon. Two bomb designs appeared to be the most promising: a uranium "gun" device and a plutonium "implosion" device.

Hundreds of LANL properties were constructed during the war years (1943–1945). Yet, as of May 2000, only 65 buildings and structures remained. Manhattan Project properties range from modest temporary wooden buildings of World War II mobilization design to more substantial concrete structures. Many of the properties originally housed administrative or support activities and are of minor significance to the history of the Manhattan Project; however, a few of the remaining buildings played key roles in the development of the first atomic weapons and are highly significant properties. Of these, the cluster of buildings known as V-Site was among the most significant.

Of the two approaches to bomb design, the implosion method was extremely difficult to perfect. However, by the fall of 1944, there was enough confidence in the success of the implosion weapon to begin selection of a site where a test device, later known as the Trinity device, could be assembled. In 1944, a small portion of the S-Site high explosives area was set aside for the development of V-Site. The wooden buildings and structures eventually constructed at V-Site were used to test assemble the Trinity device before its shipment to the Trinity Site in southern New Mexico. V-Site was one of the most secret facilities at the early laboratory—no pictures of World War II-era activities at V-Site could be located in LANL's extensive photographic archives.

### ***Cold War (1946–1990)***

Most of the existing buildings and structures at LANL belong to the period that historians have termed the Cold War, which is dated between the end of the Manhattan Project in 1946 and the aftermath of tearing down of the Berlin Wall in 1989 and the events that led to the dissolution of the former Soviet Union in 1991. At LANL, the Cold War is divided into two separate periods, the Early Cold War era (1946–1956) and the Late Cold War era (1956–1990).

As noted in Chapter 2, the Early Cold War era was characterized by the completion of fundamental nuclear weapons designs and other diverse research including supercomputing, biomedical and health physics research, explosives research and development, early reactor technology, pioneering physics research, and the development of early high-speed photography.

The early years of the Late Cold War era witnessed the continued support of atmospheric testing programs in the Pacific and at the Nevada Test Site (NTS) and subsequent underground testing at NTS. Other defense mission undertakings during this time included treaty and test ban verification programs (such as using satellite sensors to detect nuclear explosions), research and development of space-based weapons, and continued involvement with stockpile stewardship issues.

Cold War period non-weapon research supported a variety of undertakings including nuclear medicine, genetic studies, collaborations with the National Aeronautics and Space Administration (NASA), superconducting research, contained fusion reaction research, and other types of energy research (McGehee and Garcia 1999).

Study of Cold War period facilities at LANL is presently ongoing in order to assess the specific historic significance of each facility. This process, which is being pursued concurrent with infrastructure upgrades throughout the LANL complex, will likely take several more years to complete.

## INITIAL FIRE EFFECTS

During the period of May 11 through May 12, 2000, the Cerro Grande Fire consumed 2,400 ac of LANL land. The fire crossed into the Laboratory via Water Canyon, immediately impacting the Grant and Garcia homestead site on the east side of West Jemez Road. It crossed through LANL's high explosives area, home of historic V-Site, burned across the Laboratory to TA-6, the location of the Montoya homestead, and into the Pajarito Road corridor, the location of the Romero and McDougall homesteads. Many of the affected Homestead and Manhattan Project properties were located in low- and moderate-burn severity areas. Unfortunately, because of the dry and well-aged nature of the wood found at these sites, many of the structures and buildings were almost entirely consumed by fire. Most of the later Cold War architecture at LANL is built using poured concrete or concrete masonry units. For the most part, the fire did not affect this style of construction.

## GENERAL FIRE EFFECTS TO HOMESTEAD PERIOD PROPERTIES

Ten LANL homestead sites are located within the burn perimeter of the Cerro Grande Fire. These sites represent 66% of the identified patented homesteads at LANL. The 10 homesteads had a variety of features, both wooden and non-wooden, and still have data potential in the form of subsurface features and unanalyzed artifact scatters. Unfortunately, however, all significant structures or buildings associated with Hispanic homesteading at LANL were lost. Major Homestead period losses include the cabin and shed from the Montoya y Gomez homestead on Two-Mile Mesa, LA 21334 (Figures 11.1 and 11.2), the standing privy and other wooden features from the Grant and Garcia homestead in Water Canyon, LA 16807, and the Upper Pajarito Canyon Bridge, LA 89826.

There are a number of additional Homestead period sites and features located within the burned area perimeter at LANL. These sites, discussed in greater detail in Chapter 12, include isolated trash scatters and animal pens, wagon road segments, drainage-control and water-retention features, and temporary shelters. Homestead Era wooden resources on nearby U.S. Forest Service land were also totally consumed by the fire. Forest Service losses include the Garcia cabins and the "Line Camp" cabin north of Rendija Canyon (Figures 11.3 and 11.4).

### ***Post-Fire Flooding***

On June 28, 2000, an intense rainstorm caused significant flooding along West Jemez Road. This flooding event damaged State Route 501 in Water Canyon and destroyed the Anchor Ranch Ice House (Feature 1 of LA 16808) in TA-8. A nearby Homestead period wooden (LA 89826) appears to have been likewise destroyed by this flood (see Chapter 12). Due to the severity of this flood event (see Figures 11.5 and 11.6), which was triggered by the high severity burn on U.S. Forest Service lands upslope from TA-8, it was feared that this presaged one or more seasons of additional flood damage to facilities and cultural resources at LANL. This situation helped to spark the construction of flood retention structures in several canyons, and the placement of protective cement barriers around the historic Pond cabin (LA 21973) in Los Alamos Canyon. Fortunately, in the nearly 2.5 years since the destruction of the ice house and bridge, no other cultural resources have been impacted by fire-enhanced flooding.





**Figure 11.1.** LA 21334, the Montoya cabin on Two-Mile Mesa before the Cerro Grande Fire.



**Figure 11.2.** The Montoya cabin after the Cerro Grande Fire.





**Figure 11.3.** U.S. Forest Service Homestead Era site, LA 12710, the “Line Camp” before the Cerro Grande Fire.



**Figure 11.4.** The “Line Camp” after the Cerro Grande Fire.





**Figure 11.5.** The Ice House at Anchor Ranch (pre-flood and pre-fire).



**Figure 11.6.** The Ice House (post-flood and post-fire).

## **FIRE EFFECTS TO MANHATTAN PROJECT AND EARLY COLD WAR PROPERTIES**

Manhattan Project properties were also lost on May 11, 2000. When the Cerro Grande Fire burned across LANL's high explosives testing area, four of six properties at V-Site were destroyed. Luckily, Building TA-16-516, the Trinity device assembly building, remained untouched. Before the fire, an open wooden shed at V-Site was being used to house historic casting equipment salvaged from another Manhattan Project building (Figures 11.7 and 11.8). The shed and all combustible artifacts were burned. Other metal and glass artifacts were either melted or severely damaged by the effects of the fire.

Storage buildings TA-40-72 and TA-40-73, built in 1945, were completely consumed by fire. TA-16-372, a wooden cooling tower built in 1953, was also completely burned. A small complex of historic buildings located at TA-15 was partially burned; the damage to these buildings, known as the "The Hollow," is detailed in a LANL historic building survey report written after the Cerro Grande Fire (McGehee and Garcia 2001). The fire also impacted TA-14-5, a small wood-frame control room and attached concrete bunker—the wooden portion of the building was burned. Additionally, several Manhattan Project experimental areas with wooden elements at former TA-7 were burned, and two historic wooden bomb covers on Two-Mile Mesa were almost completely destroyed by the fire (see discussion in Chapter 8).

### ***Manhattan Project (1942–1946)***

**TA-14-5.** TA-14-5 was constructed in 1944. The building was originally used as a control room and was of wood-frame and concrete construction. In 1961, the function of the building changed from a control room to a storage area. The wooden part of the building was destroyed during the Cerro Grande Fire. The small concrete bunker is still standing (Figures 11.9 and 11.10).

**V-Site.** TA-16-515 (originally V-1 and V-2) was built in 1944 and was completely destroyed by the fire (Figures 11.11 and 11.12). It was a wood-frame building with a low-pitched roof and a concrete foundation. There were asbestos shingles on the exterior of the building, and the south and east sides of the building were barricaded with an earthen berm. This building was a high explosives processing building (McGehee 1995).

TA-16-518 (originally V-6) was built in 1945 and was completely destroyed by the Cerro Grande Fire. It was a three-sided, wood-frame structure with a concrete foundation. This building had 10 "bays" and abutted building TA-16-519 on the southwest end. It was used as a storage shed and later used for inert storage (McGehee 1995).

TA-16-519 (originally V-7), built in 1944, was also completely destroyed. It was a wood-frame building with a low-pitched roof and a concrete foundation. It was connected to the east wall of TA-16-520 by a common wall. Building TA-16-519 was used as a storage building and was later used for inert storage and, possibly, classified material storage (McGehee 1995).

TA-16-520 (originally V-8), built in 1944, was completely destroyed by the fire. It was a wood-frame building with a concrete foundation. It was connected to the west wall of TA-16-519 by a common wall. Building TA-16-520 was used as a storage building and possibly for testing. It was later used for inert storage and, possibly, classified material storage (McGehee 1995).

TA-16-524, an electrical pit built in 1944, was also destroyed. It was of timber construction and was located at the V-Site area.





**Figure 11.7.** Artifacts stored at V-Site before the Cerro Grande Fire.



**Figure 11.8.** Artifacts stored at V-Site after the Cerro Grande Fire.





**Figure 11.9.** TA-14-5, remaining concrete portion and berm after the Cerro Grande Fire.



**Figure 11.10.** TA-14-5, rear view of former control room and berm after the Cerro Grande Fire.





**Figure 11.11.** TA-16-515 at V-Site before the Cerro Grande Fire.



**Figure 11.12.** TA-16-515 after the Cerro Grande Fire.



**TA-40.** TA-40-72 and TA-40-73 (originally TD-2 and TD-3) were completely destroyed in the fire (Figures 11.13 and 11.14). These two identical buildings were built in 1945 from the same plans and were used as general storage buildings. However, they were also identified as “magazines” on a 1955 Laboratory Structure Location Map and probably functioned at one time as explosives support buildings. They were wood frame with 2-in. by 4-in. studs and bracing set on reinforced concrete floors and appear to have had asbestos siding or shingles.



**Figure 11.13.** TA-40-72 after the Cerro Grande Fire.

### *Early Cold War (1947–1963)*

**TA-2.** The elevated risk of flooding in Los Alamos Canyon necessitated the emergency removal of TA-2-4, a small building at the historic Omega West Reactor facility (Figure 11.15). This building was built in 1947, and, although used primarily as a guard station, was once used to store radioactive material associated with the Omega West Research Reactor (McGehee 2000).

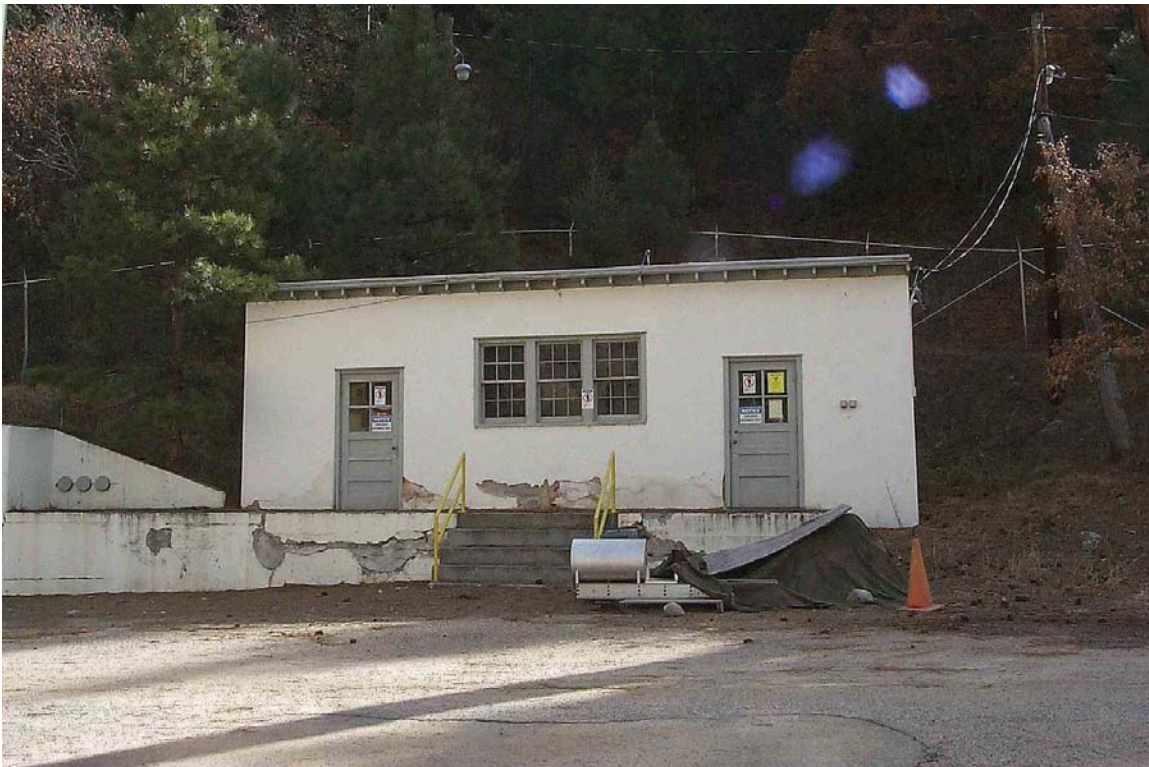
**TA-15.** TA-15-50, built in 1959, was completely destroyed in the fire. This building was originally built as a three-sided structure then modified to a shop and laboratory building. It was of wood construction with corrugated steel siding (McGehee and Garcia 2001). TA-15-371, built in 1960, was completely destroyed in the fire. It was a covered passageway located between buildings TA-15-50, the “Staff Shop,” and TA-15-194, the “Pulsed Power Laboratory.” It was constructed of corrugated steel and wood with plastic “sky lights” (McGehee and Garcia 2001).

**TA-16.** TA-16-372 was a wooden cooling tower built in 1953 (McGehee 1995). It was located near TA-16-390 and was completely destroyed by the fire (Figures 11.16 and 11.17).





**Figure 11.14.** TA-40-73 after the Cerro Grande Fire.



**Figure 11.15.** TA-2-4 in Los Alamos Canyon.





**Figure 11.16.** TA-16-372 before the Cerro Grande Fire.



**Figure 11.17.** TA-16-372 after the Cerro Grande Fire.

## **FIRE-IMPACTS TO MINOR BUILDINGS AND STRUCTURES (Post-1963 or Otherwise Exempt from Review)**

Minor support structures and properties built after 1963 are exempt from NRHP-eligibility consideration under the terms of a programmatic agreement between the DOE/Office of Los Alamos Site Operations and the New Mexico SHPO due to their lack of historical significance (Programmatic Agreement Number MOU DE-GM32-00AL77152, Appendix A). Many of the properties that were damaged or destroyed by the fire are exempt from review but are included in this section of the report for information purposes only.

### ***TA-15***

TA-15-239, built in 1965, was completely destroyed in the fire. Structure TA-15-239 was a covered passageway located between TA-15-50, the “Staff Shop,” and TA-15-203, the “REX Laboratory.” The passageway was constructed of corrugated steel and wood with plastic “sky lights.”

Two metal storage sheds, TA-15-314 and TA-15-339, and four metal storage transportainers, TA-15-329, TA-15-372, TA-15-374, and TA-15-375, were destroyed in the fire.

### ***TA-16***

Two transformer stations, TA-16-559 and TA-16-578, were completely destroyed.

### ***TA-46***

TA-46-86, a cooling tower, and its associated pump house, TA-46-87, were both built in the 1960s. TA-46-86 was completely destroyed in the fire and TA-46-87 was damaged.

Six office trailers or modular office buildings were completely destroyed at TA-46: TA-46-121, TA-46-181, TA-46-241, TA-46-242, TA-46-325, and TA-46-397. These properties were installed at the technical area between 1964 and 1990.

### ***TA-52***

An office trailer, TA-52-111, was installed at TA-52 in 1988 and was completely destroyed by the Cerro Grande Fire.

### ***TA-64***

At TA-64, three Morgan<sup>®</sup> Sheds (TA-64-7, TA-64-19, and TA-64-23) and two metal transportainers (TA-64-18 and TA-64-21) were completely destroyed by the fire. TA-64-9, an office trailer installed in 1988, was also completely destroyed. Five military expandable shelters used for storage (TA-64-11, TA-64-12, TA-64-13, TA-64-15, and TA-64-24) are listed as having been destroyed by the fire; however, two of the shelters, TA-64-15 and TA-64-24, may have been removed from the Laboratory in August 1998.



## **POST-FIRE CULTURAL RESOURCE MANAGEMENT ISSUES FOR FIRE-IMPACTED HOMESTEADS AND MANHATTAN PROJECT AND COLD WAR RESOURCES**

### ***Initial Field Assessment and Mitigation***

Field assessments were initially conducted to determine the degree of damage from the Cerro Grande Fire. Flood, tree fall, and erosional risks were also assessed. Tree-ring samples were taken from burned or flooded sites, and initial assessments of impacts to artifact scatters were carried out. (Dendrochronology data from the impacted sites are included in Appendix I). Fire effects to non-combustible Homestead period artifacts were easily identified. These effects included evidence of spalling on ceramic surfaces and an increase in friability and surface degradation on metal objects. Additionally, many glass items have cracked or shattered since the fire, and plastic and rubber artifacts, if not melted, have become more brittle. At V-Site, the surfaces of the kettles used to process high explosives are now significantly rusted. The intense heat of the fire at V-Site was clearly demonstrated by the numerous metal items that had melted.

### ***Long-Term Management and Preservation***

The Cerro Grande Fire has made it obvious that long-term management of historic wooden properties will be an important part of LANL's cultural resource management responsibilities. One of the first steps to be taken will be the development of historical contexts for both the Homestead and Manhattan Project periods at LANL. These contexts will be developed using a compilation of pre-fire documentation from a variety of sources—from existing site forms to homestead patent papers, historic photographs, and interviews. Using the information presented in the context documents, the most significant properties from these historic periods will be selected for stabilization and preservation.

The 10 patented homestead sites still have data potential in the form of subsurface features and unanalyzed artifact scatters. Other Homestead Era sites (summarized at the end of Chapters 7–10), while not formally identified with a patented homestead site, also have similar data potential. Unfortunately, many burned historic artifacts are rapidly deteriorating—as stated above, increased surface spalling and artifact friability are just some of the observed post-fire effects. In response to the post-fire risk of data loss, a mitigation plan will be developed that will include the in-field analyses of historic artifact scatters located in the areas burned by the Cerro Grande Fire.

### ***Management Of The V-Site And Other Manhattan Project Properties***

In 1998, V-Site was designated an official project of the *White House Millennium, Save America's Treasures* grant program. The DOE received a grant to restore the buildings for the development of a Manhattan Project interpretative center. The grant required private matching funds to be raised, and the DOE entered into a cooperative agreement with the National Trust for Historic Preservation to assist in raising the necessary private funds. The Cerro Grande Fire necessitated a reevaluation of the original preservation project centered on the buildings at V-Site. After the fire, the DOE consulted with the Advisory Council and the SHPO. A main discussion topic was that the fire's impacts were now part of the history of V-Site and that this would have to be acknowledged in some way.

A decision was ultimately made to leave the ruins of TA-16-515 in a post-fire state (see Figure 11.12) and to rebuild the original courtyard area around TA-16-516, the intact assembly building. To date, the

remains of TA-16-515 have been decontaminated of asbestos-containing material, and a large crane, associated earthen berms, and the foundation have been left in place.

The DOE has also decided to identify an alternate Manhattan Project property for the development of the Manhattan Project interpretive center. One possible candidate is the “periscope bunker,” a cement bunker built into the side of a small hill near the historic Anchor Ranch site. This building was used for ballistics experiments in the design of Little Boy, the uranium gun device. The building was originally equipped with a tall periscope that allowed researchers to observe ballistics tests from the safety of the bunker.